

① Write the direct variation function  
if  $y=34$  when  $x=17$ .  $f(x)$

② Then tell me what  $y$  would be  
if  $x$  was  $7.5$ .

$$y = kx \Rightarrow f(x) = kx$$
$$f(x) = 2x$$

$$k = \frac{y}{x} = \frac{34}{17} = 2$$

$$f(7.5) = 2(7.5) = 15$$

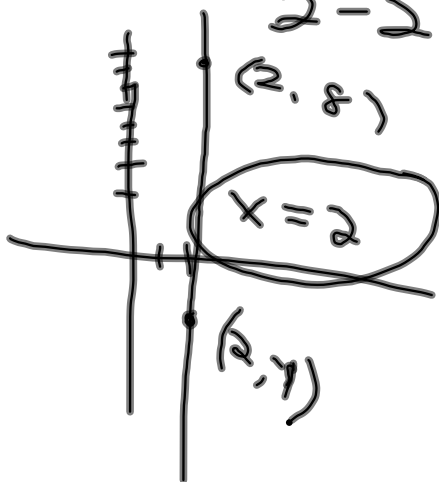
$$4. \quad y = \frac{3}{5}x - 1$$

$$-\frac{5}{3}$$

5.  $(2, -1)$   $(2, 8)$

$$m = \frac{8 - -1}{2 - 2} = \frac{9}{0}$$

undefined



## Linear Regression

line of best fit

x	y
3.7	10.5
7.4	22.6
12.3	31.2

$$y = ax + b$$

$$a = 2.37$$

$$b = 2.9$$

$$y = 2.37x + 2.9$$

$$\text{Growth} = 2.37(\text{time}) + 2.9$$

A baby grows.....

x (months)	y (in)
0	18.7
1	20.3
2	22.7
3	25.1
4	27.3

① Find the line of best fit.

$$y = 2.2x + 18.42$$

② Predict the length

① 6 months

$$y = 2.2(6) + 18.42$$

$$= \boxed{31.62 \text{ in}}$$

③ How long will it take for the baby to be 50 in?

$$y = 2.2x + 18.42$$

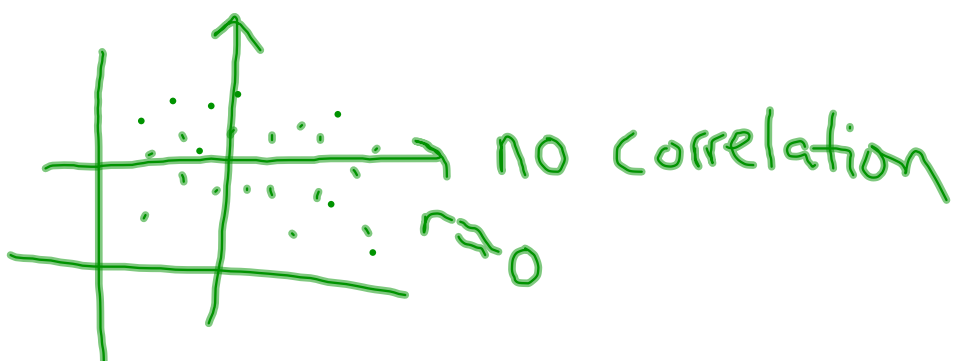
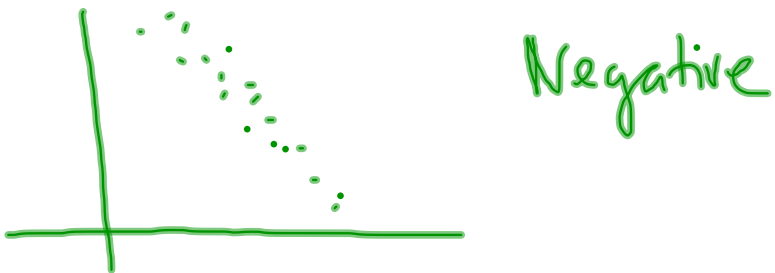
$$50 = 2.2x + 18.42$$

$$\begin{array}{r} -18.42 \\ \hline \end{array}$$

$$\begin{array}{r} 31.58 = 2.2x \\ \hline 2.2 \end{array}$$

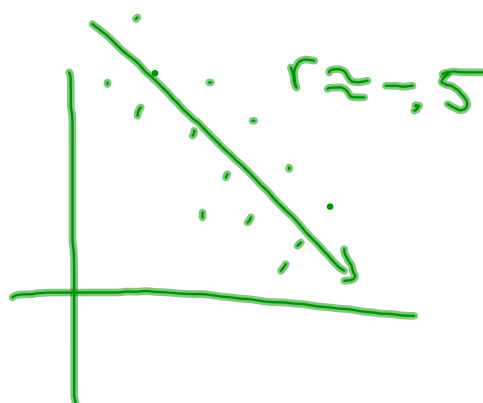
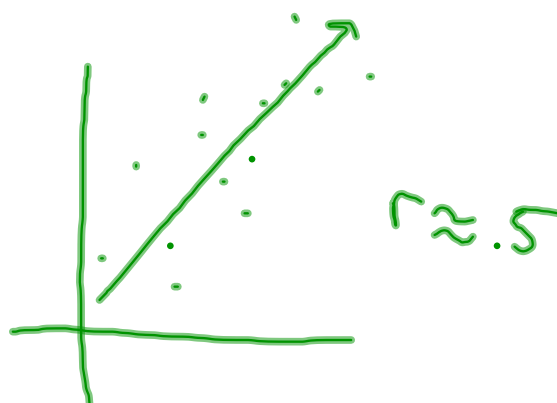
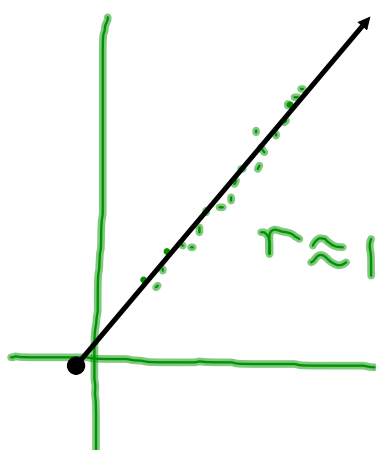
$$x = 14.35 \text{ months}$$

## Correlation



## Regression - r value

(how well does your data  
fit the line of best fit)



Ex) Tell if correlation is positive,  
negative, or if there no correlation.  
Estimate the regression as  $-1, -.5, 0, .5, \text{ or } 1$



positive  
correlation

$$r = .5$$



p 117 3-5, 7-9, 10

3) NEG

4) POS

5) NO

7) 0

8) .5

9) -1

10) b)  $y = 13.1x - 37$

c)  $y = 258.3$

$y = 13.1(20) - 3.7$

① Graph  $y = |x|$  in calc.

② Graph  $y = |x+4| - 2$

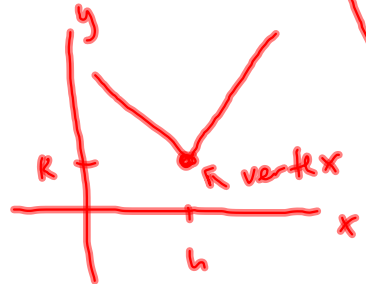
General Form

$$y = a|x-h| + k$$

$(h, k)$  vertex of the graph

$a$  - magnifier

(if  $a$  is negative, the "v" is flipped)



$$y = |x+4| - 2$$

$$y = a|x-h| + k$$

$h = -4$  \* opposite of this

$$k = -2$$

① Find vertex  $(-4, -2)$

② Plot another  $x$  value near vertex

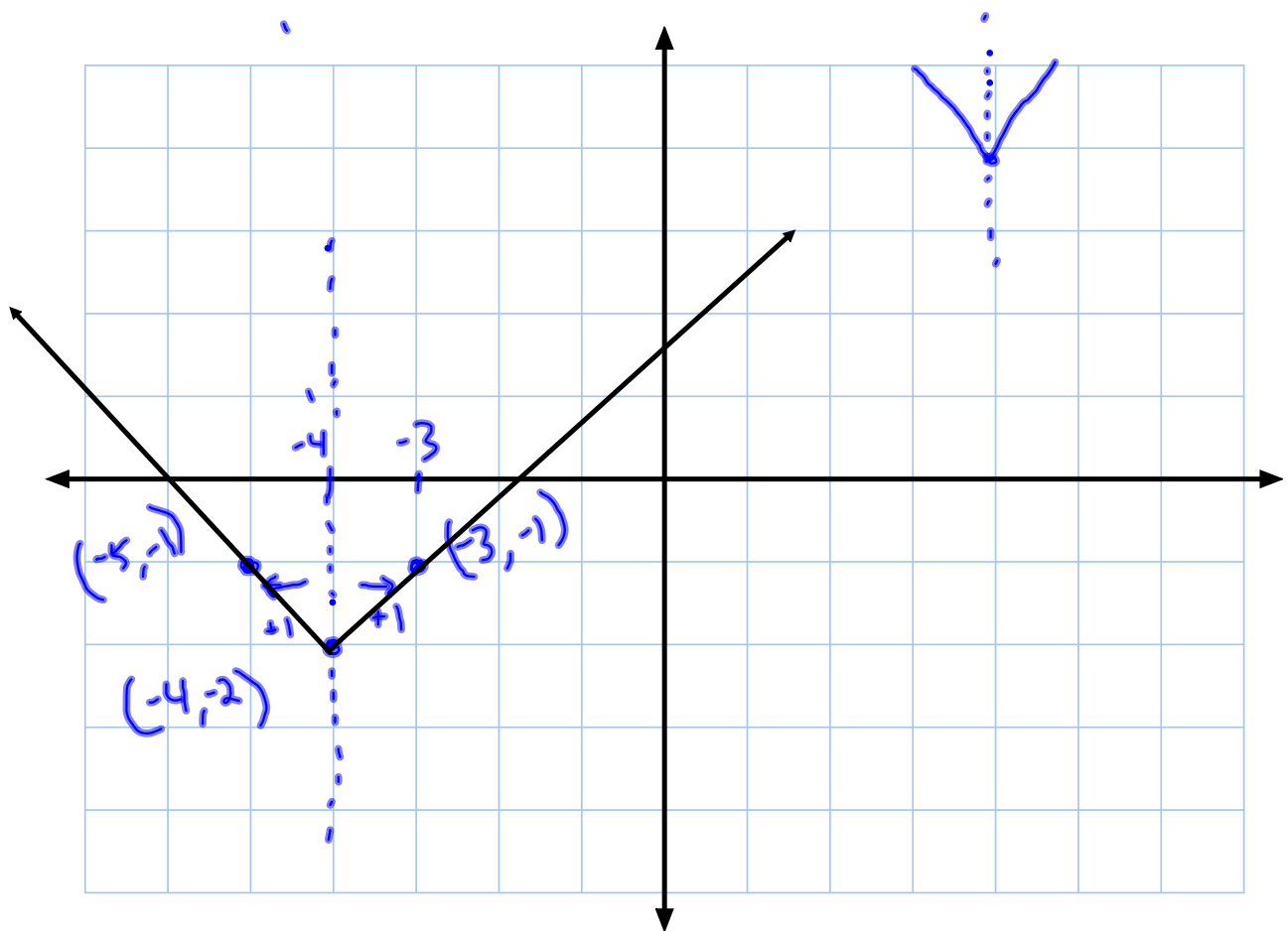
$$x = -3$$

$$y = |-3+4| - 2$$

$$(-3, -1)$$

$$y = |1| - 2 = 1 - 2 = -1$$

③ Reflect the new point across the axis of symmetry



Graph :  $y = -2|x-1| + 3$

$$y = a|x-h| + k$$

① vertex  $(1, 3)$

② New point

③ reflect

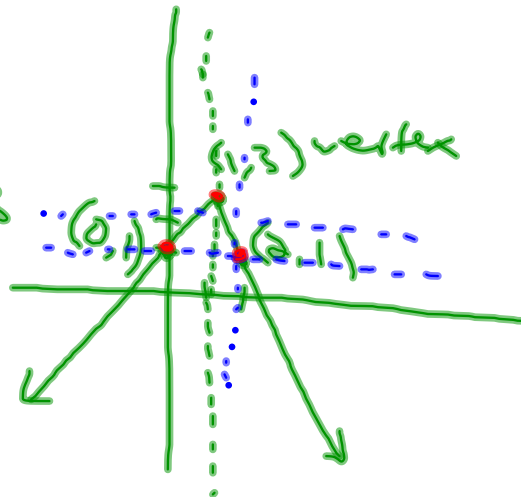
$$x=2$$

$$y = -2|2-1| + 3$$

$$= -2|1| + 3$$

$$= -2 + 3 = 1$$

$$(2, 1)$$



$$y = -3|x+1| - 2$$